Quality Assurance Project Plan

Section A: Planning Elements		
A1. Title (Project Name):	Stony Hill Road TCE Site	
EPA ID#:	NCN000410857	
Project Location:	Wake Forest, Wake Co., NC	
Project Requestor and Organization:	Harry Zinn, NC Superfund Section	
Project Manager's Name, Position, and Organization:	Harry Zinn, Environmental Engineer, Site Evaluation and Removal Branch, NC Superfund, 1646 Mail Service Center, Raleigh, NC, 27699-1646. (919) 707-8374. harry.zinn@ncdenr.gov	
Project Manager's Signature:		Date: 10-16-12
Technical Reviewer's Name and Position:	Jim Bateson, Head, Site Evaluation and Removal Branch, NC Superfund	
Technical Reviewer's Signature:		Date: 10/16/2012
QA Reviewer's Name and Position:	Jack Butler, Section Chief, NC Superfund	
QA Reviewer's Signature:		Date: 10-16-12
DAO's Name, Position, and Organization:	Carolyn Callihan, Superfund Site Evaluation Section, EPA Region 4	
DAO's Signature:		Date: 10-16-12
A2. Table of Contents	• Page i of the NC generic QAPP • Section No. TOC of NC Superfund Section Health and Safety SOP Manual (http://portal.ncdenr.org/web/wm/div/safety/program) • Sampling Plan Table 1, Figures 1-4	
A3. Distribution List	Carolyn Callihan, US EPA Jim Bateson, NC Superfund Scott Ross (File Room), NC Superfund Harry Zinn, NC Superfund Section	

A4. Project Personnel	**Organization**	**Responsibilities** (cell)
Harry Zinn, Engineer	NC Superfund	*Project Lead/Sampler/GPS* 919-815-7253
Stuart Parker, Hydrogeologist	NC Superfund	*Sampler/GPS*
Jim Bateson, Hydrogeologist	NC Superfund	*Sampler/Team Lead/*
Sue Murphy, Hydrogeologist	NC Superfund	*Sampler/Scribe*

Comments: The NC Superfund Section organizational chart and delegation of duties can be found in Section 3.1 and Appendix A of the NC generic QAPP.

A5. Background:	The site is located along Stony Hill Road, Bud Morris Road, Bent Road and ChurchillDrive approximately 0.5 miles north of the intersection of Stony Hill Road and NC Highway 98. This is located approximately 3.75 miles west of Wake Forest. The coordinates of the site are 35.9895° north latitude and -78.6080° west longitude. They are based on the location of the shed that used degreasers during the operation of a circuit board assembling operation at 7303 Stony Hill Road. In August, 2005, Charles Arnold (7305 Stony Hill Road) contacted Mr. Greg Bright of Wake County Environmental Services Department to complain of a petroleum smell in his water. The sample collected on August 25, 2005 from his well documented well contamination with tetrachloroethylene (PCE 39 microgram per liter (ug/l)); trichloroethylene (TCE 110 ug/l); 111- trichloroethane (1,1,1-TCA 19.2 ug/l) and 1,1-dichloroethene (1,1-DCE 7.7 ug/l) (Ref. 1). NC Division of Water Quality (NC DWQ) was contacted (Ref. 2) and re-sampled this well plus two other wells immediately south of the impacted well. The two new wells were not impacted. Four additional wells across Stony Hill Road (SHR) were sampled but no detections were documented. The house on the property at 7305 SHR was hooked up to the well serving 7303 SHR which was documented to be clean. Soil samples collected from areas around 7303 and 7305 SHR were shown to be contaminated with PCE at level between 13 and 32 ug/kg and a trace amount of TCE Additional soil sampling by a contractor for the owner of 7303 SHR in June 2006 verified low levels of PCE and TCE in the soils around the building on 7303 SHR. With no additional wells being impacted and the single affected house being supplied alternate water, efforts were made from 2006 until 2007 to identify all potentially responsible parties (PRPs) and have a Required Action Plan performed by them. In 2007 the site was transferred from NC DWQ to NC Division of Waste Management (NC DWM) Inactive Hazardous Sites Branch (IHSB). From 2007 until 2012 NC DWM continued to try to identify PRPs and have them develop a Site Assessment. In June, 2012, IHSB personnel contacted 10 residences within 1000 feet of the site to obtain access to sample their wells. Three of the resident granted access (7303, 7305 and 7333 SHR). Wells at 7305 and 7333 SHR have been impacted by PCE and TCE above the current MCL (5 ug/l). On July 10, 2012 Jim Bateson of NC DWM referred the site to EPA Region 4 Emergency Response and Removal Branch (ERRB) via telephone and e-mail. Since that time ERRB has sampled over 100 residences in the area around the site, including 11 community wells. Of these, 10 private wells are above the TCE Maximum Contaminant Level (MCL) of 5 ug/l. Currently, four filter systems have been installed and bottled water is being supplied to the remaining private wells close to or above the MCL. To date, 21 private wells have detections of TCE and/or

	PCE, 11 of which are above EPA's Removal Management Level (RML) Three additional wells have detections of TCE just under the MCL. Water line hookups to these 14 residences are currently ongoing.
A6. Project Description:	Collecting real time soil gas data with the use of a highly sensitive Photo Ionization Detector. GPS readings will be collected at all locations.
Decision(s) to be made based on data:	Phase II soil, groundwater and/or soil gas samples will be collected from areas with PID readings three times higher than the area background readings.
Applicable regulatory information, action levels, etc.	NA
Field Study Date:	October 15, 2012 through October 25, 2012
Projected Lab Completion Date:	n.a.
Final Report Completion Date:	October 25, 2012 (Trip report in support of Phase II SAP QAPP)
A7. Quality Objectives and Criteria:	Identification of the seven steps of the data quality objectives (DQO) process: DQOs were established for the Stoney Hill Road Site to define the quantity and quality of data to be collected to support the objectives of the sampling event. DQOs were developed using the seven-step process outlines in the following EPA guidance documents: "Guidance on Systematic Planning using the Data Quality Objectives Process," EPA QA/G-4 (http://www.epa.gov/quality/qs-docs/g4-final.pdf), February 2006; "Guidance for Quality Assurance Project Plans," EPA QA/G-5 (http://www.epa.gov/quality/qs-docs/g5-final.pdf), December 2002; and "EPA Requirements for Quality Assurance Project Plans,", EPA QA/R-5 (http://www.epa.gov/region8/qa/QAEPAr5-final.pdf), March 2001. **Step 1: State the Problem** Investigate if the properties included in this study are contributing to regional groundwater contamination with TCE and PCE. Potential source areas identified with screening methods during Phase I will be investigated in Phase II using a direct push drilling rig and the impact hammer and rods, along with laboratory analyses of soil and perhaps soil gas samples. **Step 2: Identify the Goals of the Study** If soil gas trends indicate areas of impact, additional soil, groundwater and/or soil gas sampling planned for Phase II will be focused in these areas. **Step 3: Identify Information Inputs** TCE and PCE have been documented in the regional groundwater. PID readings will be compared to zero gas and area background readings to identify where activities at the site may have impacted soil and groundwater.

	Step 4: Define the Boundaries of the Study TCE and PCE have been documented in the regional groundwater. PID readings will be compared to zero gas and area background readings to identify areas where activities at the site may have impacted soil and groundwater. Three parcels have been identified as suspect source areas. Field screening around these areas will be performed on a grid to delineate areas that may have been impacted by site activities. (Figure 1.) Several transects will be located along geographically and hydrologically significant areas to determine possible groundwater transport of the contaminants. Transects will be located between 9 impacted wells (those wells with detects greater than the MCL located outside the three source area properties) and the dwellings located on those parcels, to determine if vapor intrusion is potentially occurring at those residences. (Figure 1.) **Step 5: Develop the Analytic Approach** Field screening will only supply qualitative, not quantitative information. **Step 6: Specify Performance or Acceptance Criteria** If no trends appear on the basis of Phase I PID readings, Phase II samples will be collected from locations based only on topography and operational history. If Phase I readings taken on any given transect do not reach levels three times greater than background, but elevated PID readings do show well defined and consistent trends, those elevated readings may still be used to guide sampling to be done during Phase II. All areas with PID readings above three times background levels will be sampled during Phase II. **Step 7: Develop the Plan for Obtaining Data** Proposed sampling includes two source areas as well as a number of topographic or hydrogeologically significant areas. Ten residences with potable well impacts above the MCL will also be investigated.
A8. Special Training/ Certifications:	• Section 3.3 of the NC generic QAPP. • Section 2.1 and Appendix A of NC Superfund Section Health and Safety SOP Manual (http://www.wastenotnc.org/SAFETY/WebSite/SFSafety.HTM)
A9. Documents and Records:	Section 3.4 of the NC generic QAPP.

Section B: Data Generation and Acquisition	
B1. Sampling Design	A broad sampling design was chosen to detect any indications of a release from the site. Sample locations can also be found on Figure 1 of the sampling plan.
B2. Sampling Methods, General Procedures:	*SESD Field Branches Quality System and Technical Procedures* (*http://www.epa.gov/region4/sesd/fbqstp/index.html*) • Global Positioning System, April 20, 2011 • Field Equipment Cleaning and Decontamination, December 20, 2011 • Field Sampling and Measurement Procedures and Procedure Validation, December 18, 2009, (PDF, 9pp, 586K) • Field Sampling Quality Control, October 15, 2010 • Logbooks, October 8, 2010 Soil vapor readings will be collected using the following procedure: A 5/8 inch diameter shaft with a dedicated point is driven by a Bosch hammer drill to a depth of 9 feet or to refusal. Once the hole is driven, a length of Teflon tubing is placed in the hole and the top sealed to eliminate any fresh air intrusion into the hole. A Scientific Ion Phocheck 5000, zeroed out between holes, is then attached to the Teflon tubing and run for a minimum of 5 minutes. A 5/8 inch diameter hole 9 feet deep has a volume of 33.13 cubic inches or 0.5429 liters. The pump rate of the Phocheck 5000 is 220 ml/min, therefore, the volume of a nine foot deep hole would be purged after 2.47 minutes. The meter starts at zero and, if compounds are present, gradually rises during the first three minutes and stabilizes until the reading is recorded after five minutes. Typically, at holes with higher readings it takes more time for the readings to stabilize. Reading are deemed to be stable if they do not vary by more the 0.01 ppm over a 30 second time period. The drive steel is decontaminated between holes and if the meter is not able to be zeroed out, the Teflon tubing is changed out, and checked to see the meter is zeroed.
B3. Sampling Handling and Custody:	No samples will be collected
B4. Analytical Methods:	NA
CLP:	NA
SESD:	NA

B5. Quality Control:	
Field:	• Rinsate blanks are collected on a quarterly basis on equipment used for sampling during that calendar quarter. • Rinsate blanks are collected on a quarterly basis on gloves utilized for sampling during that calendar quarter. • Rinsate blanks are collected on a quarterly basis on the DI water system maintained and utilized by the NC Division of Waste Management for decontamination of sampling equipment.
Laboratory:	NA
B6. Instrument/Equipment Testing, Inspection and Maintenance:	• Section 3.4 and Appendix B of the NC generic QAPP • Section 6 of NC Superfund Section Health and Safety SOP Manual (http://www.wastenotnc.org/SAFETY/WebSite/SFSafety.HTM)
B7. Instrument/Equipment Calibration and Frequency:	All monitoring equipment and instruments are calibrated a minimum of once daily, at the start of the day, when field activities requiring use of the equipment occur. Serial numbers and calibration records are maintained in the field logbook for the project. Any inconsistencies and errors during calibration are also to be noted in the field logbook. Equipment to be used for this project and requiring calibration includes: • MiniRae(s): Science Ion Pho-Check Tiger is calibrated to Isobutylene at a concentration of 50.0 ppm. Acceptable range is plus or minus 2 ppm (48.0-52.0 ppm). Tiger is photoionization detectors (PIDs) used to monitor VOC levels in soils to a ppb range. • GPS Trimble XT/XM Units: Used for geolocating sampling locations. GPS Units do not require calibration.
B8. Inspection/Acceptance for Supplies and Consumables:	All critical supplies and consumables for this field investigation are inspected and maintained by the QAO and designated staff, as discussed in Section 3.2 of the NC generic QAPP. A list of these supplies is included in Appendix B of the NC generic QAPP.
B9. Non-direct Measurements:	Not applicable.
B10. Data Management:	The project manager will be responsible for ensuring that all requirements for data management are met. All data generated for this field investigation, whether hand-recorded or obtained using an electronic data logger, will be recorded, stored, and managed according to the following procedures: *SESD Operating Procedure for Control of Records*, SESDPROC-002-R5. (http://www.epa.gov/region4/sesd/fbqstp/Control-of-Records.pdf) *SESD Operating Procedures for Logbooks*, SESDPROC-010-R4. (http://www.epa.gov/region4/sesd/fbqstp/Logbooks.pdf)

Section C: Assessment/Oversight	
C1. Assessments and Response	Assessments will be conducted during the field investigation according to

Actions:	*SESD Operating Procedure for Project Planning*, SESDPROC-016-R2 (http://www.epa.gov/region4/sesd/fbqstp/Project-Planning.pdf) to ensure the QAPP is being implemented as approved. The Project Manager is responsible for all corrective actions while in the field. Section 3.2.4 of the NC generic QAPP.
C2. Reports to Management:	The Project Manager will report to their immediate supervisor if any circumstances arise during the field investigation that may adversely impact the quality of the data collected. The Project Manager and/or their immediate supervisor will also be responsible for notifying the EPA Project Manager if any circumstances arise during the field investigation that may adversely impact the quality of the data collected. Section 3.2.4 of the NC generic QAPP

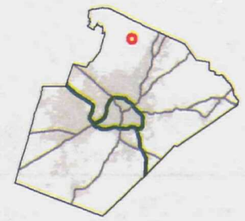
Section D: Data Validation and Usability	
D1. Data Review, Verification, and Validation:	Section 3.2.4 of the NC generic QAPP.
D2. Verification and Validation Methods:	Section 3.2.4 of the NC generic QAPP.
D3. Reconciliation with User Requirements:	Review of blanks is evaluated by the Project Manager using the following guidelines: • *USEPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review, EPA-540-R-08-01, June 2008 (http://www.epa.gov/superfund/programs/clp/download/somnfg.pdf)* Review of data is evaluated by the Project Manager using the following guidelines: • *USEPA Using Qualified Data to Document an Observed Release and Observed Contamination, EPA 540-F-94-028, Exhibit 3 and Tables 1-4 (http://www.epa.gov/superfund/sites/npl/hrsres/fact/docoroc.pdf)* Section 3.2 of the NC generic QAPP

STONEY HILL ROAD
TCE SITE JUL-OCT 2012
PHASE I SAMPLING PLAN

Fig:	1
Site:	NCN 000 410 857
City	Wake Forest, NC
County:	Wake
Date:	10/08/2012
Drawn By:	SMM

Drinking Water Sampling Results

- Detection - Level I
- Detection - Level II
- No Detection
- Site
- Potential Sources
- Detection > MCL



North American Datum 1983
North Carolina State Plane (3200)

Contour Interval 4 Feet

1 inch = 1,000 feet

Miles

0.2 0.1 0 0.2

NCDENR

Source: Wake County, Buildings; Well Sample Locations, NC Division of Waste Management; Contour, NC DOT (Derived from 2007 LIDAR)